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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/807,025	06/07/2001	Robert Christiaan Makkus	BO-41866	9700

466 7590 05/12/2003

YOUNG & THOMPSON  
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ARLINGTON, VA 22202

EXAMINER
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BARR, MICHAEL E

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 05/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/807,025

Applicant(s)

MAKKUS ET AL.

Examiner

Michael Barr

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 10-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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## DETAILED ACTION

### *Preliminary Amendment*

1. The examiner acknowledges the cancellation of Claims 1-9 and 15-18. Claims 10-14 are pending.

### *Election/Restrictions*

2. Applicant's election without traverse of Group I in Paper No. 9 is acknowledged.

### *Specification*

3. The disclosure is objected to because of the following informalities: There is no discussion or description of Fig. 3 in the specification, nor is there a brief description of Fig. 3.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Coleman.

Coleman teaches coating a stainless steel substrate with a titanium oxide barrier layer, and then applying a nickel layer to the titanium oxide layer (Fig. 2C; Col. 5, lines 34-45).

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Coleman does not teach that the stainless steel is non-oxidized. However, one of ordinary skill in the art would have recognized that stainless steel does not readily oxidize and since Coleman does not indicate a desired to oxidize the stainless steel, thus one of ordinary skill in the art practicing Coleman would have found it obvious to use non-oxidized stainless steel with the expectation of providing the desired results. Coleman does not teach that the coating is electrically conductive and corrosion-resistant. However, since Coleman teaches the same materials and process as claimed, then it would have been expected that the coating applied would also inherently have the claimed properties. If this is not the case, then it must be due to critical limitations not being claimed.

6. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE 19523637 in view of Coffinberry et al.

As indicated on Page 1 of the applicant's specification, DE 19523637 teaches providing a corrosion resistant coating on a stainless steel plate for a fuel cell, where the coating is provided by applying a titanium nitride diffusion barrier layer on the stainless steel, and then applying a nickel layer to the titanium nitride layer. However, DE 19523637 does not teach applying a titanium oxide layer as a diffusion barrier layer. Coffinberry et al. does not teach that titanium oxide applied to a stainless steel substrate provides a diffusion barrier to the migration of such metals as nickel (Col. 10, lines 38-41; Col. 11, lines 8-15; Col. 12, lines 10-13). It would have been an obvious modification, for one skilled in the art, to the DE 19523637 process to substitute a titanium oxide layer for the titanium nitride layer, with the expectation providing the desired diffusion barrier between the nickel layer and stainless steel plate, since it is shown by Coffinberry et al. that titanium oxide is a known barrier to prevent diffusion of nickel to a

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stainless steel substrate, which is the desire of the DE 19523637 process. DE 19523637 does not teach that the stainless steel is non-oxidized. However, one of ordinary skill in the art would have recognized that stainless steel does not readily oxidize and since DE 19523637 does not indicate a desired to oxidize the stainless steel, thus one of ordinary skill in the art practicing DE 19523637 would have found it obvious to use non-oxidized stainless steel with the expectation of providing the desired results. DE 19523637 and Coffinberry et al. do not specifically teach that the coating is electrically conductive. However, since DE 19523637 and Coffinberry et al. teach the same materials and process as claimed, then it would have been expected that the coating applied would also inherently have the claimed properties. If this is not the case, then it must be due to critical limitations not being claimed.

DE 19523637 does not specifically teach that one of the layers be at least 25 microns in thickness. However, DE 19523637 does indicate that it is known in the art to provide the nickel layer at a thickness of 50 microns (Col. 2, lines 28-30). Therefore, it would have been an obvious modification to the DE 19523637, for one skilled in the art, to provide the nickel layer to a thickness of 50 microns, with the expectation of providing the desired fuel cell component, since it is shown by DE 19523637 the such nickel layer thickness is known in the art.

7. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE 19523637 and Coffinberry et al. as applied to claim 10 above, and further in view of McKee.

DE 19523637 and Coffinberry et al. do not teach applying the claimed adhesion layer or applying the layers by high velocity oxygen flame spraying. McKee teaches applying a diffusion barrier coating of titanium oxide to a stainless steel substrate by high velocity oxy-fuel spray or HVOF (which is synonymous with the claimed high velocity oxygen flame spraying), where a

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NiCrAlY bond coat is applied to the substrate in order to enhance the adhesion of the barrier layer to the substrate (Col. 4, lines 1-55). It would have been obvious to one skilled in the art to modify the DE 19523637 and Coffinberry et al. process by including a NiCrAlY bond coating between the stainless steel and the titanium oxide coating and to applying the titanium oxide coating by HVOF, with the expectation of enhancing the adhesion of the titanium oxide to the stainless steel surface and with the expectation of providing the desired deposition of titanium oxide, since it is shown by McKee that such a bond coat provides the benefit of enhanced adhesion of a titanium oxide layer to stainless steel and that HVOF is a known and conventional method of forming a titanium oxide layer on stainless steel.

### *Conclusion*

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hiermaier et al. teaches making a fuel cell part by coating stainless steel with a diffusion barrier and then with nickel.

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Barr whose telephone number is 703-305-7919. The examiner can normally be reached on Monday-Thursday 6:00 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on 703-308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 or 703-305-5408 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

A handwritten signature in black ink, appearing to read 'Michael Barr', with a long, sweeping horizontal line extending to the right.

Michael Barr  
Primary Examiner  
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MB  
May 7, 2003